2000-603117/58 B05 C03 E15 **BADI 1999.03.12**
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1999.03.12 1999-1011169(+1999DE-1011169) *(2000.09.14)* C07C 45/65, 49/587, 49/597, 49/607

Alpha, beta-unsaturated cyclic ketone preparation in high yield for use as pharmaceutical or agrochemical intermediate, by catalytic gas-phase dehydrogenation of saturated analog in presence of little or no oxygen

C2000-180608
Addnl. Data: FISCHER R, PINKOS R

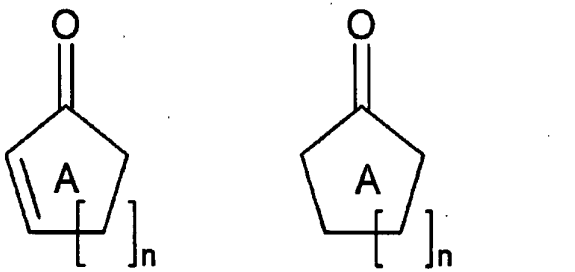
B(10-F2) C(10-F2) E(10-F2A1) N(3-F) .1

NOVELTY

Preparation of α, β-unsaturated cyclic ketones (I) by gas-phase catalytic dehydrogenation of saturated cyclic ketones (II) is effected at 250-600°C, in presence of 0-0.5 moles of oxygen per mole of (II), using a catalyst of BET surface more than 0.5 m^2/g.

DETAILED DESCRIPTION

Preparation of α, β-unsaturated cyclic ketones of formula (I) by gas-phase catalytic dehydrogenation of saturated cyclic ketones of formula (II) is effected at 250-600°C, in presence of 0-0.5 moles of oxygen per mole of (II), using a catalyst of BET surface more than 0.5 m^2/g.



(I) (II)

n = 1-10;
rings A are optionally substituted.

USE

The process is especially used for dehydrogenation of cyclopentanone or cyclohexanone (both claimed), to give cyclopentenone or cyclohexenone respectively. (I) are intermediates for pharmaceuticals or plant protectants.

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ADVANTAGE

Under the present conditions (I) can be prepared continuously in high yield by a simple, industrially applicable gas-phase process, without the risk of uncontrollable decomposition or explosion.

EXAMPLE

Cyclopentenone was added at 20 ml per hour to 20 NL per hour of nitrogen and passed at over 100 ml of catalyst comprising zinc oxide of BET surface 15 m^2/g at 500°C. The effluent gas was condensed by cooling and analyzed by gas chromatography. The composition was 67 wt. % cyclopentanone and 29 wt. % cyclopentenone.

TECHNOLOGY FOCUS

Organic Chemistry - Preferred Process: Reaction is carried out in presence of 0-0.2 (preferably 0-0.1) moles of oxygen per mole of (II), under a pressure of 0.1-10 bars, in presence of water.

Inorganic Chemistry - Preferred Catalysts: The catalysts are oxides, preferably containing or consisting of oxides of metals of Groups 2-14 (especially Groups 7-12).

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